

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3, 4, 7-12 and 15-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Bartlett (WO 99/00536).

With regard to claims 1, 3, 4, 11, 15, 16 and 22, Bartlett discloses porous films and membranes to be used as anode (positive electrode) or cathode (negative electrode) and solid electrolytes in electrochemical devices and sensors (page 1, lines 7-14; page 3, lines 3-5; page 16, lines 1-6) wherein said positive electrode comprises a mesoporous structure having a periodic arrangement of substantially uniformly sized pores (page 7, lines 5-7) with a diameter in the order of  $10^{-9}$  to  $10^{-8}$  m<sup>2</sup> (1 to 10 nm; page 10, lines 24-26), wherein the mesoporous structure of the positive electrode is a metal, such as nickel or nickel alloys (page 4, lines 15-18), a metal oxide or hydroxide (page 4, lines 13-23; page 12, lines 17-31) wherein said metal oxide, such as Nickel oxide (page 5, lines 9-13; page 12, lines 20-32) forms a surface layer over said metal and extending over at least the pore surfaces (page 4, lines 22-23; page 5, lines 18-20) and wherein said negative electrode comprises a material such as carbon, nano-particulate carbon, cadmium or palladium (page 12, lines 20-32, page 10, lines 1-2).

With regard to claims 7 and 19, Bartlett teaches wherein the mesoporous

structure has a pore number density of about  $4 \times 10^{11}$  to  $3 \times 10^{13}$  pores per  $\text{cm}^2$  (page 10, lines 28-30).

With regard to claims 8 and 20-21, Bartlett teaches wherein at least 75% of the pores in said mesoporous structure have pore diameters within 30%, of the average pore diameter, more preferably within 10%, and most preferably 5% of average pore diameter (page 11, lines 1-4).

With regard to claims 9 and 10, Bartlett discloses wherein the mesoporous structure has a hexagonal arrangement of pores that are continuous through the thickness of the electrode (page 6, lines 29-31; see figure 1) having a pore periodicity of  $60 \text{ \AA}$  (6nm).

With regard to claim 12, Bartlett teaches wherein said mesoporous structure is a film having a thickness in the range of about  $100 \text{ \AA}$  to about 20 micrometers (page 9, lines 5-7).

With regard to claim 16, Bartlett discloses wherein said negative electrode comprises a material such as carbon, nanoparticulate carbon, cadmium or palladium (page 12, lines 20-32; page 10, lines 1-2).

With regard to claim 17, Bartlett further teaches wherein said cell is constructed to function as a battery (page 16, lines 1-14).

With regard to claim 18, Bartlett further discloses wherein the mesoporous structure has a pore diameter in the range of about 1 to 10 nm (page 10, lines 24-26).

***Response to Arguments***

***Claim Objections***

3. The objection previously made to claim 18 has been withdrawn in view to applicant's amendments.

***Remarks***

4. Applicant's arguments filed on March 4, 2010 have been fully considered but they are not persuasive. The applicant argues the following:

- a. Bartlett fails to teach wherein the claimed materials could be used as electrode materials in cells of portable electronic devices. In response, the Examiner respectfully disagrees. The invention of Bartlett relates to porous films which have found extensive applications as positive and negative electrodes (page 1, line 13; page 15, line 28 to page 16, line 14) that show improved properties for use in batteries (portable device), fuel cells, electrochemical capacitors and sensors among others (page 1, lines 5-30).
- b. Bartlett mentions a wide range of possible applications in very general terms but does not mention power density or energy density. However, the examiner does not find this argument persuasive because the applicant states that the present invention is concerned with meeting these requirements by using a positive electrode in a cell with the structure and characteristics recited in the claims. Therefore, since the teachings of Bartlett meet all of the structural claimed limitations, one having ordinary skill in the art would have also expected the device of Bartlett to provide the high power density and energy density that is required by a portable electronic device, i.e. a battery as disclosed by Bartlett.

c. The disclosures of Bartlett recite a vast range of different metals and metal compounds. In contrast, independent claim 1 requires a very small group of specific metal oxides, hydroxides that must be used as positive electrode materials. Thus, it cannot be said that Bartlett discloses the Metal oxides, hydroxides and oxy-hydroxides of independent claim 1. In response, the Examiner does not find this argument persuasive because, as discussed above, Bartlett teaches wherein the porous films of his invention have found extensive applications as electrodes in many devices (page 1, lines 7-30; page 15, line 28 to claim 16, line 14). These porous films may be made of metallic elements and their oxides, such as gold, palladium and nickel (page 12, lines 17-31), as recited in claim 1.

### ***Conclusion***

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ZULMARIAM MENDEZ whose telephone number is (571)272-9805. The examiner can normally be reached on Tuesday-Friday from 9am to 7pm.

6. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

7. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/HARRY D WILKINS III/  
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Examiner, Art Unit 1723